

provided for by later observations, to secure for persons properly qualified the use of powerful telescopes now idle and therefore useless, and, in general, to secure for the person best qualified for any given research the best possible means of carrying it on. It would provide means for co-operation, and would aim at the advancement of astronomy, regardless of country or any personal considerations. The cost of this plan, if fully carried out, would be less than that of a first-class observatory, and it could be fairly tried for a short time at a moderate expense. For success, it must be wholly unselfish and this condition permanently secured, the investments must be safe, and the net income large. It is believed that no guardian would more surely fulfil these conditions than the Corporation of Harvard College.

EDWARD C. PICKERING.

### THE ROYAL VISIT TO GLASGOW.

THE laying of the memorial stone of the new buildings for the Glasgow and West of Scotland Technical College by His Majesty King Edward on Thursday, May 14, is a gratifying indication of the importance now attached to an efficient system of technical education. The ceremony at the College was the first item on the programme of the Royal visit to the city, and, except as regards the weather, which was more lavish of the April shower than the May sunshine, was most successfully carried out. An hour before the arrival of the King and Queen upwards of 4000 guests had assembled on the site of the new buildings, and their Majesties, on stepping on to the royal platform, received a most loyal welcome. Lord Balfour of Burleigh, the minister in attendance on the King, introduced to His Majesty Mr. W. R. Copland, the chairman of the Governors of the College, and Mr. D. Barclay, the architect of the new buildings, and the laying of the memorial stone was immediately proceeded with. In thanking His Majesty, Mr. Copland recalled the fact that, so long ago as 1881, on the laying of the memorial stone of the Central Technical College of the City and Guilds of London, His Majesty was pleased to recognise the importance of educating persons destined to take part in the productive industries of the kingdom, and referred to the training of the intelligence of the industrial community as the great factor in retaining the position of Britain as a manufacturing nation. The King, in reply, expressed the great pleasure it had given him to lay the memorial stone; he had long recognised the importance of the work done by institutions of this kind, and hoped the building now to be erected would realise to the full the expectations of the governors.

In the course of the day their Majesties visited the University, the foundation stone of which they had laid on October 8, 1868. The Very Rev. R. H. Story, D.D., Principal and Vice-Chancellor of the University, the professors, lecturers and demonstrators, and a large body of graduates were assembled in front of the magnificent building on Gilmorehill, and in the name of the University the principal presented an address to His Majesty. In the address it was noted that, except on two occasions, in 1849 and in 1888, when Queen Victoria visited Glasgow, no Sovereign of Great Britain had seen this University since King James VI. visited it on his return to his ancient kingdom after succeeding to the throne of England. In his reply the King expressed his great gratification at having an opportunity, accompanied by the Queen, of renewing his acquaintance with the ancient University; he was deeply interested in the allusions to the visits of his predecessor King James VI. and of his august and beloved mother, Queen Victoria; he recalled with satisfaction his own share

in laying the foundation stone of the noble building, and he earnestly desired that this and other universities as schools of higher learning might grow and prosper, and so advance the material progress of his people.

After His Majesty had replied to the address, the Deans of Faculties were presented to him by Lord Balfour.

The constitution under which the Glasgow and West of Scotland Technical College is now working dates from 1886, but the institution itself had its origin in Anderson's College, which was founded in 1796 under the will of John Anderson, M.A., F.R.S., professor of natural philosophy in the University of Glasgow, and is thus certainly the oldest institution of the kind in Great Britain, and probably in the world. Prof. Anderson was in many respects a remarkable man. The idiosyncrasies of his character brought him into frequent conflict with his colleagues in the University, but it is more pleasant to record that he seems to have been deeply impressed with the importance to the industries of the city of awakening in masters and workmen an intelligent interest in the scientific aspects of their trade. He made frequent visits to the local workshops, and took great pains to make himself familiar with local industries. It is well known that when James Watt had difficulties put in his way by the incorporation of hammermen of Glasgow he was appointed mathematical instrument maker to the University, and it was Anderson with whom he was most closely associated in this post. In furtherance of his aims Prof. Anderson inaugurated classes in the University designed to attract employers and workmen as well as the ordinary university students, and these he carried on until his death in 1796. At the present day, when technical education has assumed such a prominent position in the public mind, it is but fair to recall with gratitude the work of the man who may be justly named its pioneer.

On his death Prof. Anderson bequeathed all his means "to the public, for the good of mankind and the improvement of science, in an institution to be denominated 'Anderson's University.'" He directed that the management of the institution was to be vested in the Board of Trustees constituted under his will, and this Board continued in existence until 1886, when the institution was incorporated in the Glasgow and West of Scotland Technical College.

The first chair created was that of chemistry and natural philosophy, and was occupied by Dr. Thomas Garnett until 1799, when he was called to fill the first professorship in the Royal Institution. His successor in Glasgow was Dr. George Birkbeck, who formed a special class for "the gratuitous instruction of the operatives of Glasgow in mechanical and chemical philosophy," in the belief that "men should be taught the principles of the arts they practise." This class, which was named "the Mechanics' Class," separated in 1823 from Anderson's College and took the title of "Mechanics' Institution," the first of the many mechanics' institutions that marked the movement for the scientific education of artisans. In 1881 the Glasgow Mechanics' Institution changed its title to that of "The College of Science and Arts," and continued to maintain a separate existence until it was merged with the parent institution in the present Technical College.

The names of many eminent men are associated with Anderson's College. Among its professors were Dr. Andrew Ure, author of "The Dictionary of Arts and Manufactures"; Dr. Thomas Graham, afterwards Master of the Mint, for whom the honour is claimed of establishing the first laboratory for public instruction in chemistry in Great Britain; Dr. Thorpe, the present Director of the Government Laboratories; Dr. W. Dittmar; and Dr. G. Carey Foster, the present Principal of University College, London. Among its students were Dr. Livingstone; Lord Playfair; Dr. James Young, the founder of the Scottish oil industry; and Sir J. H. Gilbert, of Rothamsted. Lord Kelvin and his brother, Prof. James Thomson, were students of the Mechanics' Institution.

In 1886, by an Order of Her late Majesty, Queen Victoria, in Council, Anderson's College, the College of Science and Arts, the "Young" Chair of Technical Chemistry—founded

in connection with Anderson's College by its then president, Dr. James Young, referred to above—Allan Glen's Institution, and the Atkinson Institution were amalgamated to form the Glasgow and West of Scotland Technical College. The main object of the governors of the reconstituted institution has been from the first "to afford a suitable education to those who wished to qualify themselves for following an industrial profession or trade"; it is not the purpose of the College to supersede the ordinary apprenticeship, but rather to supplement it, and the courses for day students in engineering are arranged to permit of their spending the summer months in serving part of their apprenticeship, while devoting the winter months to college work.

The maintenance of the institution entails an annual expenditure of about 25,000*l.*, derived in approximately equal proportions from endowments, students' fees, Government grants, and grants from the Corporation of Glasgow and other public bodies.

The College work has hitherto been conducted in the buildings formerly occupied by the amalgamated institutions and in hired premises scattered over the centre of the city, but these have long been inadequate, and for some years it has been necessary to refuse admission to hundreds of students for lack of room. So serious is the want of accommodation that a gift of 5000*l.* by Mrs. John Elder to make provision for lectures of a popular character on descriptive astronomy cannot be utilised under existing conditions, and contemplated extensions in other directions are meanwhile impossible for similar reasons. In December, 1900, a meeting of the citizens was convened by the Lord Provost of Glasgow to consider the scheme which the Governors, after full deliberation on the various alternatives, had adopted for the erection of new buildings. A committee was formed to obtain subscriptions, and in less than two years a sum of nearly 180,000*l.* was raised.

The Governors appointed Mr. David Barclay, F.R.I.B.A., to be their architect, and they are satisfied that he has designed buildings admirably adapted to the purpose in view. They will consist of five large wings, two being parallel to George Street; the other three will be placed at right angles to them, and parallel to Montrose Street. The walls facing the streets will be of red Dumfriesshire stone; all the other exterior walls will be of white enamelled brick, thus securing a surface which will give the greatest amount of light to the rooms facing the three interior courts.

The following table indicates the main departments of the College, and, approximately, the space (in square feet) allotted to each:—mathematics, 5500; natural philosophy, 10,400; chemistry, 16,500; technical chemistry, 7500; mechanics, 10,000; machine design, 10,000; prime movers, 15,100; metallurgy, 4800; electrical engineering, 15,900; practical engineering, 4000; mining and geology, 3400; architecture and building construction, 7700; biology, 3200; industrial arts, 4000; workshops, 7900; bakery school, 3100; administration, library, general class-rooms, &c., 37,000.

The prime movers laboratory, the dynamo laboratory, and the practical engineering laboratory will be placed at the bottom of the interior courts, and will be lighted entirely from glass roofs. The chemical departments will occupy practically the whole of the top floor, and will contain several large laboratories and other similar rooms set apart for special purposes. The plan of confining each department to one floor has been followed throughout, with a view to promote efficiency in working.

The buildings will be the largest of the kind in Great Britain, and will cover nearly two acres; their cost, with the site, but exclusive of the equipment, will amount to about 210,000*l.* Meantime, contracts have been made for the erection of the first section of the buildings, comprising nearly three-fourths of the whole.

The inadequacy of the present buildings for the work of a technical institution has been long felt by teachers and students, but there are many scattered all over the world who have a grateful remembrance of the instruction and guidance they obtained in these old-fashioned rooms; there is every reason to hope that with improved facilities for work there will be quickened zeal to take advantage of them.

G. A. G.

## NOTES.

WE are glad to know that steps have been taken to secure and erect a memorial of the late Sir George Stokes in Westminster Abbey. At a meeting of a joint committee of the University of Cambridge and the Royal Society, held on March 12, the Duke of Devonshire being in the chair, it was resolved that the authority of the Dean and Chapter of Westminster be requested to place a medallion relief portrait of Sir George Stokes in the Abbey of the same general character as the memorials of Darwin and other scientific men already there. A letter has since been received from the Dean of Westminster expressing his general assent to the proposal and his willingness to take detailed plans into consideration. Mr. Hamo Thornycroft, R.A., has undertaken to prepare a medallion, the material to be bronze, and the head to be in high relief. It is estimated that the cost of placing this memorial in Westminster Abbey will be about 400*l.*, and as there are doubtless many admirers of Stokes who would like to contribute to the fund being raised for the purpose of the memorial to him, a subscription list has been opened. The treasurers of the fund are the Vice-Chancellor of the University of Cambridge and the treasurer of the Royal Society. Subscriptions should be made payable to Messrs. Barclay and Co., Ltd., and should be sent either to them at their Cambridge branch or to the treasurer of the Royal Society.

THE two gold Hofmann medals, established in 1888 in connection with the seventieth birthday of August Wilhelm von Hofmann, for award to distinguished foreign men of science, have been conferred by the German Chemical Society upon Prof. Henri Moissan and Sir William Ramsay.

THE centenary of the announcement of the atomic theory by Dalton was celebrated at Manchester on Tuesday and Wednesday. We propose to publish an account of the celebration in our next number with an article upon the atomic theory.

THE Royal Society of Edinburgh will hold a *conversazione* in the rooms of the Royal Institution, Edinburgh, on Saturday, June 6.

AN International Exhibition will be opened at Athens on June 3, and will last six months. The British exhibits, as at present arranged, will occupy 500 square metres, and will consist mainly of engines, ship-models, and guns.

THE Central News Agency reports that, according to a despatch from the city of Mexico, the Colima volcano is again in active eruption.

DURING the week beginning June 1, Prof. J. J. Thomson, F.R.S., Cavendish professor of experimental physics in the University of Cambridge, will, says *Science*, give a course of lectures in the physical laboratory of the Johns Hopkins University on "A Theory of the Arc and Spark Discharges."

MR. W. L. SCLATER left England last week to resume his duties as director of the South African Museum at Cape Town. Before his departure he was presented with an address signed by nearly six hundred members of the Zoological Society, testifying to the tact and ability shown by him while occupying the post of secretary, to which he was provisionally elected.

A MARBLE bust of George Stephenson was unveiled at the railway station at Rome on April 23. The bust was presented by the Institution of Civil Engineers to the municipality of Rome as a supplement to the tablet placed in the vestibule of the railway station at Rome in 1881 to commemorate the centenary of the birth of the father of the railway system.